

2SK1835

Silicon N Channel MOS FET

REJ03G0978-0400

Rev.4.00

Jun 04, 2008

Application

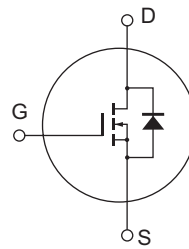
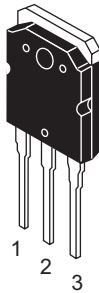
High speed power switching

Features

- High breakdown voltage ($V_{DSS} = 1500\text{ V}$)
- High speed switching
- Low drive current
- No secondary breakdown
- Suitable for switching regulator

Outline

RENESAS Package code: PRSS0004ZE-A
(Package name: TO-3P)



1. Gate
2. Drain
(Flange)
3. Source

Absolute Maximum Ratings

(Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|---|---------------------------------|-------------|------|
| Drain to source voltage | V_{DSS} | 1500 | V |
| Gate to source voltage | V_{GSS} | ±20 | V |
| Drain current | I_D | 4 | A |
| Drain peak current | $I_{D(pulse)}$ ^{Note1} | 10 | A |
| Body to drain diode reverse drain current | I_{DR} | 4 | A |
| Channel dissipation | P_{ch} ^{Note2} | 125 | W |
| Channel temperature | T_{ch} | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

Notes: 1. $PW \leq 10 \mu s$, duty cycle $\leq 1\%$ 2. Value at $T_c = 25^\circ C$

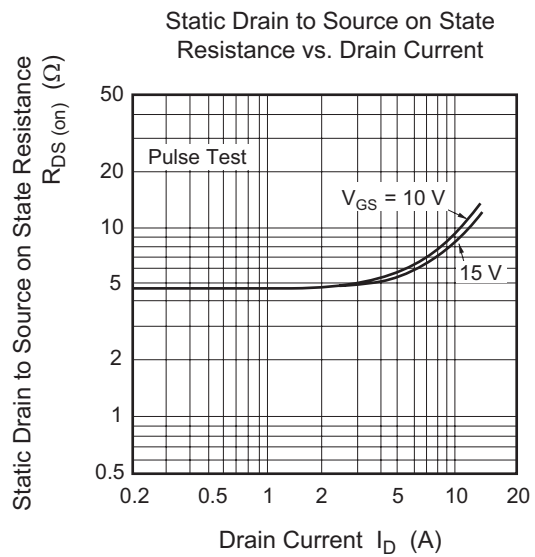
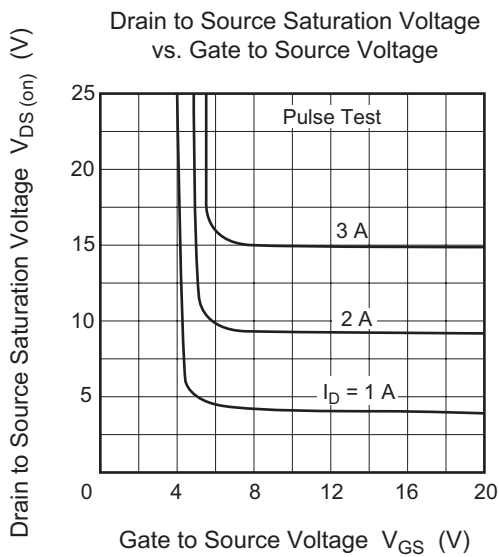
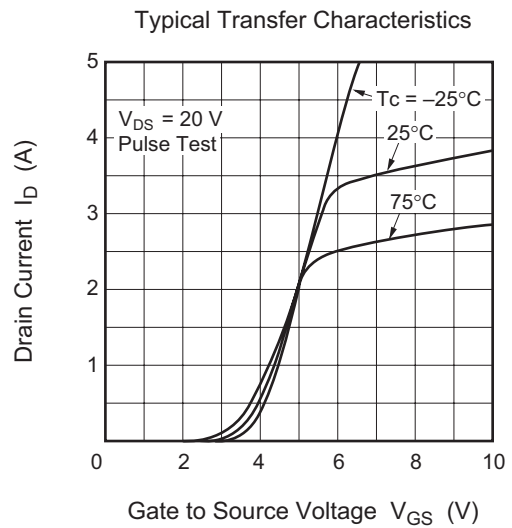
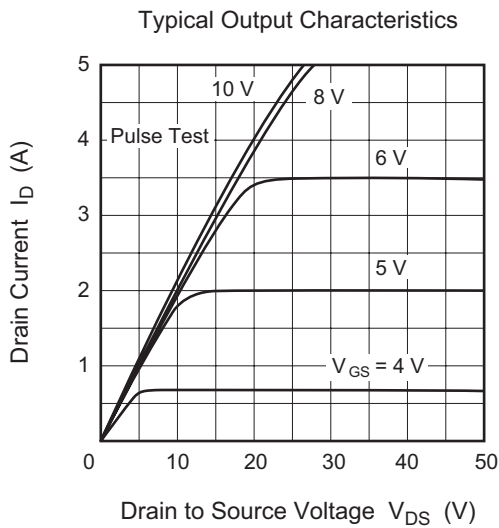
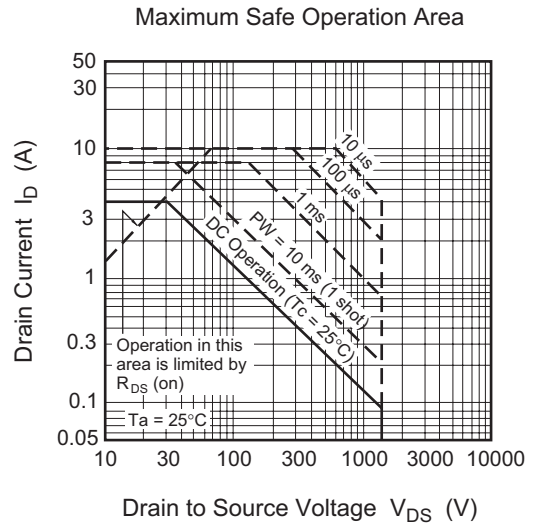
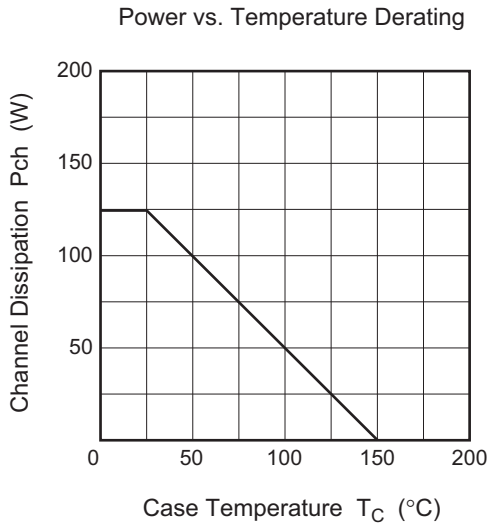
Electrical Characteristics

(Ta = 25°C)

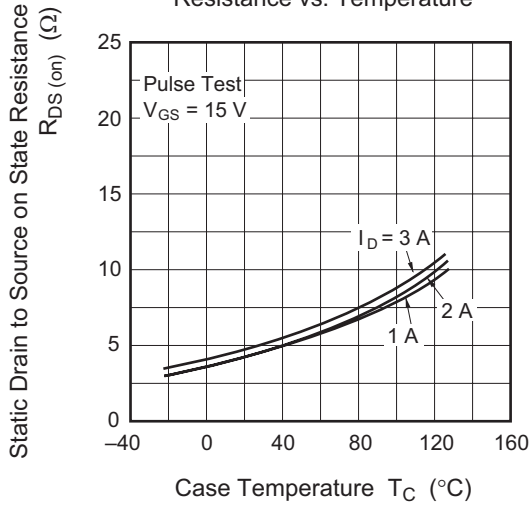
| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--|---------------|------|------|-----|------|---|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 1500 | — | — | V | $I_D = 10 \text{ mA}$, $V_{GS} = 0$ |
| Gate to source leak current | I_{GSS} | — | — | ±1 | μA | $V_{GS} = \pm 20 \text{ V}$, $V_{DS} = 0$ |
| Zero gate voltage drain current | I_{DSS} | — | — | 500 | μA | $V_{DS} = 1200 \text{ V}$, $V_{GS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 2.0 | — | 4.0 | V | $I_D = 1 \text{ mA}$, $V_{DS} = 10 \text{ V}$ |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 4.6 | 7.0 | Ω | $I_D = 2 \text{ A}$, $V_{GS} = 15 \text{ V}$ ^{Note 3} |
| Forward transfer admittance | $ y_{fs} $ | 0.9 | 1.4 | — | S | $I_D = 2 \text{ A}$, $V_{DS} = 20 \text{ V}$ ^{Note 3} |
| Input capacitance | C_{iss} | — | 1700 | — | pF | $V_{DS} = 10 \text{ V}$, $V_{GS} = 0$, $f = 1 \text{ MHz}$ |
| Output capacitance | C_{oss} | — | 230 | — | pF | |
| Reverse transfer capacitance | C_{rss} | — | 100 | — | pF | |
| Turn-on delay time | $t_{d(on)}$ | — | 25 | — | ns | $I_D = 2 \text{ A}$, $V_{GS} = 10 \text{ V}$, $R_L = 15 \Omega$ |
| Rise time | t_r | — | 80 | — | ns | |
| Turn-off delay time | $t_{d(off)}$ | — | 230 | — | ns | |
| Fall time | t_f | — | 80 | — | ns | |
| Body to drain diode forward voltage | V_{DF} | — | 0.85 | — | V | $I_F = 4 \text{ A}$, $V_{GS} = 0$ |
| Body to drain diode reverse recovery time | t_{rr} | — | 2500 | — | ns | $I_F = 4 \text{ A}$, $V_{GS} = 0$, $di_F/dt = 100 \text{ A}/\mu s$ |

Note: 3. Pulse Test

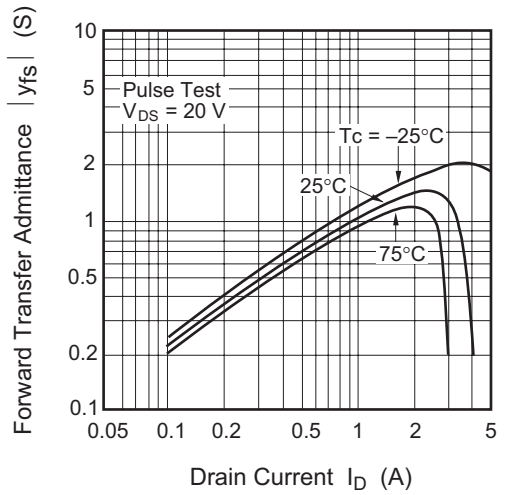
Main Characteristics



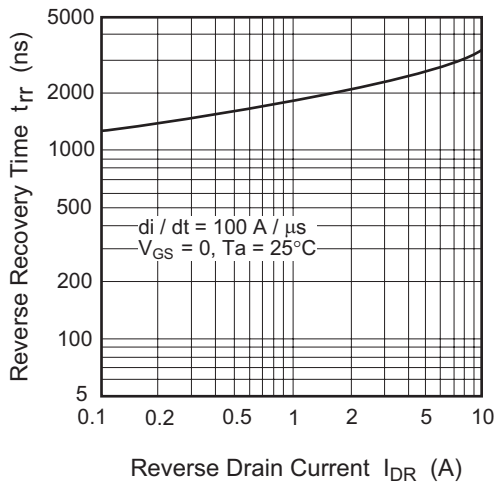
Static Drain to Source on State Resistance vs. Temperature



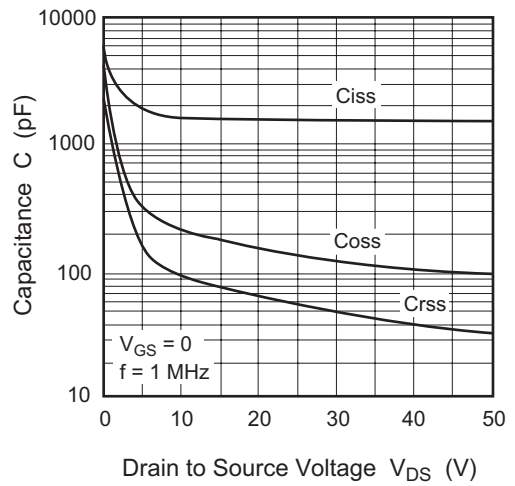
Forward Transfer Admittance vs. Drain Current



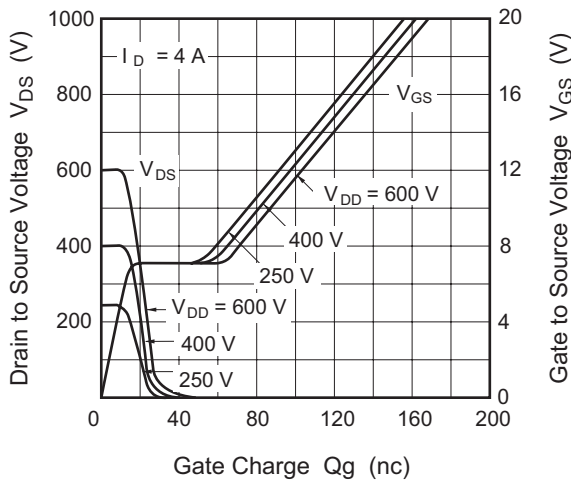
Body to Drain Diode Reverse Recovery Time



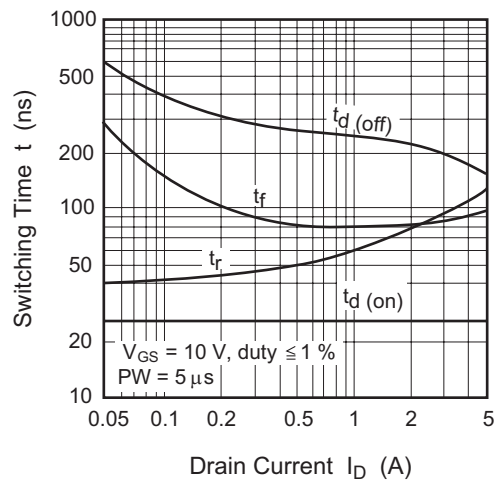
Typical Capacitance vs. Drain to Source Voltage



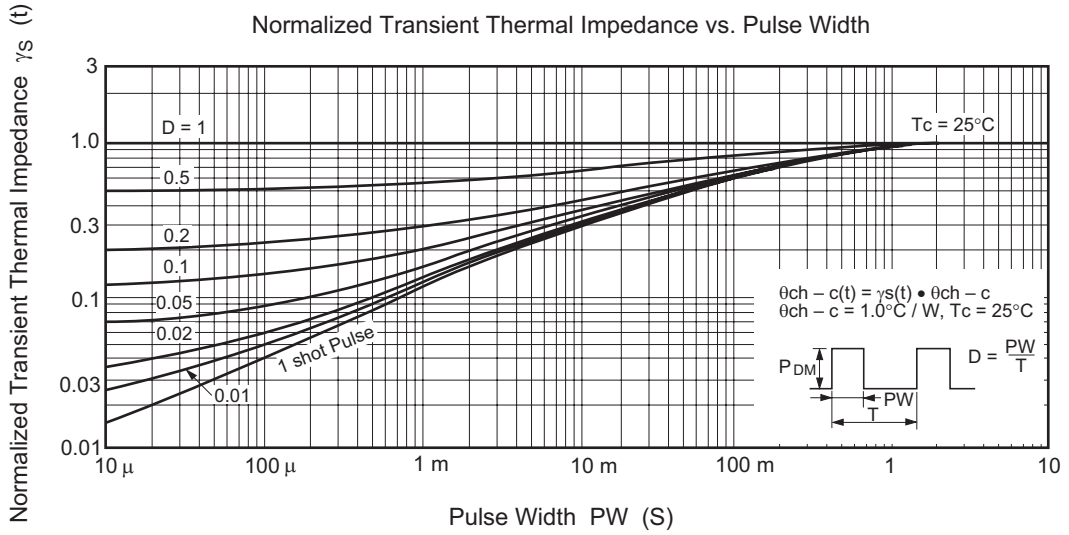
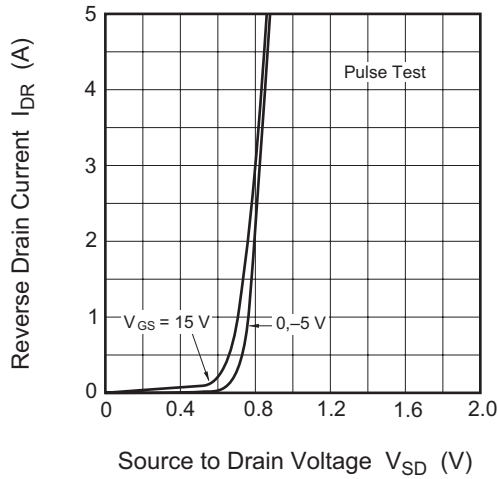
Dynamic Input Characteristics



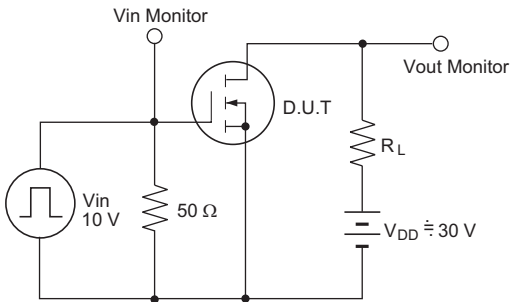
Switching Characteristics



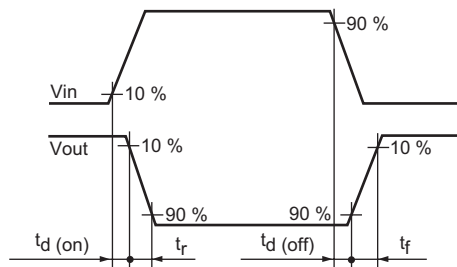
Reverse Drain Current vs. Source to Drain Voltage



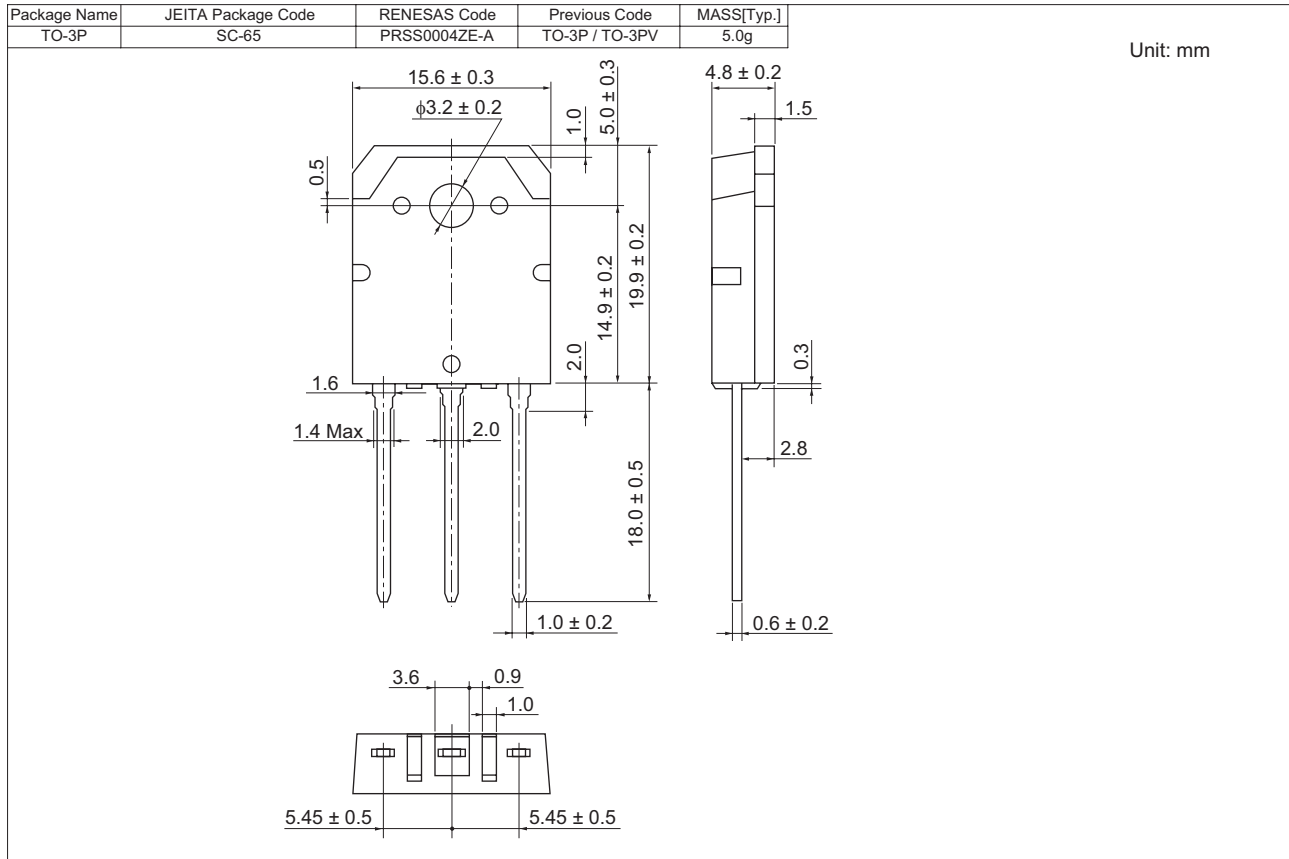
Switching Time Test Circuit



Waveforms



Package Dimensions



Ordering Information

| Part Name | Quantity | Shipping Container |
|-----------|----------|--------------------|
| 2SK1835-E | 360 pcs | Box (Tube) |

Notes:

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April 1st, 2010
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